

## CENTRAL INTELLIGENCE AGENCY

## INFORMATION REPORT

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COUNTRY USSR

TOPIC The Extension of the Electric Power System in the Georgian SSR

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REMARKS

Natural Power Reserves

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1. The Georgian SSR and Azerbaidzhan and Armenia the two other republics of the Transcaucasus, are the SSRs of the Soviet Union with the largest natural reserves for hydro power. Their rivers alone could annually supply 635,000 kW per square kilometer. The power capacity of the Georgian rivers amounts to 12 million kWs, 74 percent of which is obtained from rivers flowing into the Black Sea and the remaining 26 percent from rivers which mouth into the Caspian Sea.

empty 50X1-HUM

2. There are also rich coal mines available in the Georgian SSR, i.e. at Tkvarcheli ( $42^{\circ}51' N / 41^{\circ}41' E$ ), at Tkibuli ( $42^{\circ}22' N / 42^{\circ}59' E$ ) and at Akhaltsikhe ( $41^{\circ}38' N / 42^{\circ}59' E$ ) with a total of about 360 million tons of coal. The oil sources at South Kakhetia, especially near Mirzaani ( $41^{\circ}34' N / 45^{\circ}58' E$ ), southeast of Tiflis/Navtlugi ( $41^{\circ}42' N / 44^{\circ}45' E$ ), in the Kakhetian Mountains and in Guria on the Black Sea, especially in Supsa ( $42^{\circ}03' N / 41^{\circ}49' E$ ) district, were estimated at a total of about 180 million tons.

The Capacity of the Georgian Power Plants

3. The natural power sources are being utilized only to a limited degree. Difficulties in the construction of hydro power plants caused by the variations of water level of the Georgian rivers and the relatively small power consumption of the small industry hampered the development of the power system on the one hand, while, on the other, the development of the industry was handicapped by the insufficient power suppl. When, in the early thirties, a systematical enlargement of the industry of the Georgian SSR was initiated, and an extensive construction program for new power plants was started simultaneously, priority was given to the utilization of hydro power. The construction of oil and coal fueled thermal power plants became more important, however, when it was found that, due to climatic fluctuations, the hydro power could not reach the expected output. Yet even after the completion of the thermal power plants still under construction, the hydro power plants will still have 75 percent of the total power capacity. The following tabulation gives an approximate view on the probable development of the power capacity and output in the Georgian SSR.

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Year	Installed Capacity	Output	
1913	in Kw 8,000	in billion kWh 0.021	
1928	26,300	...	
1932	27,200	...	
1934	50,000	0.203	
1935	60,000	0.280	(scheduled)
1937	123,000	...	
1940	130,000	0.684	
1943	240,000	...	
1950	375,000	1.300	(scheduled)
1955	500,000	1.700	

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4. Four stages were clearly determined in the development of the power system in the Georgian SSR:

- a. During the time prior to 1932 which included the first Five-Year Plan, only minor construction work of local importance was done on the power system. The SAGES power plant near Zemo Achali ( $44^{\circ}49' N / 44^{\circ}45' E$ ) constructed in 1927, which had an initial capacity of 12,300 kW and supplied Tiflis with electric current was the only large power plant; while all other power stations constructed to supply towns, industrial plants, the agriculture and the railroad were small. An interconnected power transmission system did not exist.
- b. The second stage covering the period from 1933 to 1940 included extensive construction projects. New power plants put into operation included, among others, Tkvarcheli GRES near Kvezani ( $42^{\circ}51' N / 41^{\circ}41' E$ ) with an initial capacity of 24,000 kW, AZGES near Adzharis Sheli ( $41^{\circ}44' E / 41^{\circ}33' N$ ) with 16,000 kW, Rion GES ( $42^{\circ}12' N / 42^{\circ}45' E$ ) with 48,000 kW and sections of SAGES with 12,000 kW. The installed capacity increased by about 100,000 kW. The individual new power plants were connected by power transmission lines to one combined power system. Since some of the big projects including Khram GES near Molotovka ( $41^{\circ}28' N / 44^{\circ}15' E$ ) with 90,000 kW, Sukhumi GES ( $41^{\circ}03' E / 43^{\circ}06' N$ ) with 16,500 kW, the second construction stage of Tkvarcheli GRES with 24,000 kW and the installation of the last turbine at SAGES with 12,000 were not completed before the war, the power supply was insufficient, especially in the Tiflis area and during periods of low water level of the rivers. The water reservation facilities were too small to secure a constant power output during dry periods. The Tkvarcheli GRES coal fueled power plant which at that time had only 50 percent of its present capacity was far from being capable to fill the requirements when the hydro power plants failed. The construction of a thermal

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power plant in Tiflis which had a scheduled capacity of 12,000 kW and which had been started during the war could not be completed before 1946.

The third stage covered the period from 1946 to 1950. Construction projects which had been discontinued during the war and were completed during this period, some with modifications, included Tiflis with 12,000 kW, Sukhumi GES with 25,000 kW, Khram GES with 135,000 kW, and the second stage of Tkvarcheli GRES with 24,000 kW. New power plants under construction included the Rustavi TEZ steam power plant near the new steel plant at Rustavi ( $43^{\circ}51'$  E/ $42^{\circ}17'$  N) with an initial capacity of 25,000 kW, the Dviri GES hydro power plant near Chitahevsk ( $42^{\circ}08'$  E/ $41^{\circ}45'$  N) with a capacity of 60,000 kW, three hydro power plants near Samgori ( $43^{\circ}11'$  E/ $41^{\circ}42'$  N) with an unknown capacity, a hydro power plant near Akhaltsikhe with an unknown capacity and a hydro power plant near Gori ( $44^{\circ}07'$  E/ $41^{\circ}58'$  N) with an unknown capacity. It was planned to increase the power capacity of the hydro power plants alone by 169,000 kW. By 1950, the total capacity of the power system of the Georgian SSR increased by about 245,000 kW, by putting new power plants into operation and improving the old facilities. Construction projects which will be completed by 1955 include among others Tkibuli and Samgori. It is believed that the increase of capacity permitted the Georgian power plants to reduce their annual work time from 4,500 hours in 1940 to 3,660 hours and therefore to operate with a much bigger amount of capacity in reserve. New high tension power transmission lines constructed along with the power plants included Khram GES-Tiflis, Suknum GES-Kveshi, Rustavi TEZ-Tiflis, Dviri GES-Borshomi ( $43^{\circ}23'$  E/ $41^{\circ}51'$  N) and Akhaltsikhe, which connected the new power plants to the combined power net of the Georgian SSR. The third stage in the development also included the installation of automatic control systems in hydro power plants. By 1950, 50 percent of the power plants were converted to automatic control. In addition to large power plants for industrial towns, a great number of power plants was constructed for agricultural purposes. By the end of 1947, the total number of agricultural power plants in the Georgian SSR was estimated at about 500 small and five larger power stations. By 1950, this number was increased probably to about 650 power plants. In 1950 alone, 61 such power plants were under construction and 37 of them were put into operation during that year. After 1948, these very small power plants for agricultural purposes were no longer constructed and larger power plants to supply several kolkhozes (collective farms) simultaneously were built. These power plants under construction included the Tiripon hydro power plant with 3,600 kW in the Gori district which was put into operation in 1951, and supplied 150 collective farms with power. Another large power plant for agricultural purposes located in Abkhazia at the fork of the Mokva and Tuaba rivers supplied 35 villages and 40 collective farms. By late 1950, the total capacity of power plants for agricultural purposes in the Georgian SSR was given as only 20,000 kW. Since the capacity of agricultural power plants was scheduled to be increased about 21,500 kW during the 1946 to 1950 period, it is assumed that a considerable part especially of the larger power plants such as Tiripon, were not completed by the target date (1950).

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The program of development from 1951 to 1955 did apparently not include the construction of new large power plants. The projects still under construction, however, were to be completed. The water reservation facilities of the Khram GES were improved in order to put all three turbines into operation, the capacity of Rustavi TEZ was increased to 30,000 kW and Samgori and Tkibuli were completed. With all these power plants in operation, the total

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capacity of Georgian power system will be increased about 30 percent and will reach 500,000 kW by 1955. This figure would represent 1.2 percent of the total power capacity of the entire USSR which was 41 percent in 1950. According to official Soviet statements, this large increase of power capacity would still be insufficient to fill the requirements completely even after 1955 and would, therefore, still hamper the further development of the Georgian industry. It was anticipated to overcome these difficulties by increasing the capacity even more and by improving the water reservation facilities and connecting the Georgian power net to the North Caucasian and Volga power systems. The extension of the power transmission net being continued. Priority was given to the construction or completion of the Sukhum GES-Svesani and Sangori-Tiflis transmission lines. During the current five-year program special attention was attached to the installation of automatic control systems in all hydro power plants which had not been converted yet. By 1951, 66 percent of all hydro power plants of the Georgian SSR combined power system were controlled automatically. By the end of 1952, all hydro power plants were to be controlled automatically, making it 50X1-HUM 100 percent. It was planned that, by 1957, all hydro power plants should be converted to remove control systems and that also the steam power plants should be operated automatically. However, it was not known yet when the required modifications would be done. The construction of power plants for agricultural purposes also continued. Some of the power stations which had been scheduled to be completed by 1950 were now put into operation. During 1951 and 1952, the total capacity of agricultural power plants was considerably increased when five large and 20 small power plants which had been constructed after 1950 were put into operation. By 1955 the total capacity will probably reach at least 40,000 kW. According to information from mid-1950, the agricultural power capacity was increased five times by the construction of new large power plants. It was anticipated to electrify the agriculture within a short period. These agricultural consumers included 2,114 kolkhozes, 82 sovkhozes and 84 MTS. By the end of 1950, 700 collective farms were electrified and, in 1951, at least 200 additional kolkhozes were converted to be operated electrically. 50X1-HUM

by early 1953, at least 50 percent of all kolkhozes were supplied with electric current. All sovkhozes were probably electrified and 29 MTS were converted by the end of 1950. In addition to the power plants for agricultural purposes, some of the larger power plants of the combined system, as for instance Sangori and Gori, also supplied electricity to agricultural consumers.

5. The tabulation below gives a summary of the information contained in paragraphs 1 to 4 on the extension of the power system in the Georgian SSR,

## Name of Power Plant

	1932	Capacity Installed in kW	1940	1950	1955	50X1-HUM
Various smaller power plants	14,400		17,200	31,200	49,200	
SA-GES	12,800		24,800	24,800	24,800	
AZ-GES			16,000	16,000	16,000	
Tkvarchel GRES			24,000	48,000	48,000	
Rion GES			48,000	48,000	48,000	
Tiflis TEZ			47,100	12,000	12,000	
Sukhum GES				25,000	25,000	
Khram GES				25,000	25,000	
Rustavi TEZ				90,000	137,000	
Dviri GES				25,000	50,000	
Tkibuli				40,000	60,000	
Sangori					10,000	
Gori					10,000	
Total	27,600	130,000		375,000	500,000	50X1-HUM
Agricultural power plants				20,000	40,000	

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This tabulation gives only an approximate picture of the development and contains only the most important power plants. On some power plants there is either very little or no information available. The figures given for the various smaller power plants is apparently too low, while the capacity of 50X1-HUM Khram GES and Dviri GES power plants was possibly estimated too high. The capacities of the Gori, Tkibuli and Sangori power plants was estimated on the basis of general information on the construction of the plants and their future purposes. Although this tabulation will require some corrections, the order of magnitude of the power plants is probably already approximately correct.

The Combined Power System and the Consumers

6. The power plants of the Georgian SSR are subordinate to GruZenergo which, in turn, is directly subordinate to the Ministry for Power Plants and Electrical Industry under Minister M.G. Pervukhin. The agricultural power plants are subordinate to GruElektro, a subsection of the Ministry for Agriculture and Procurement under Minister I.A. Koslov. There are some small and mostly old power plants which do not belong to any of these groups and which are not connected to the GruZenergo power system; but these are subordinate to local industrial consumers or the Ministry for Traffic.
7. The GruZenergo combined power net extends about 530 kilometers from Afoni ( $40^{\circ}47'$  E/ $43^{\circ}05'$  N), south of Gudauti ( $40^{\circ}38'$  E/ $43^{\circ}06'$  N), on the Black Sea via Sukhum-Kvesani-Samtredi ( $42^{\circ}20'$  E/ $42^{\circ}11'$  N)-Khashuri ( $43^{\circ}36'$  E/ $41^{\circ}37'$  N) - Tiflis to Rustavi along the Sukhum-Tiflis-Baku ( $49^{\circ}50'$  E/ $40^{\circ}25'$  N) railroad line. High tension branch lines of this main power line lead to Akarmara ( $41^{\circ}47'$  E/ $42^{\circ}52'$  N), Poti ( $41^{\circ}42'$  E/ $42^{\circ}10'$  N), Batum ( $41^{\circ}38'$  E/ $41^{\circ}38'$  N), Shasha ( $42^{\circ}17'$  E/ $42^{\circ}12'$  N), Tkibuli Chiatura ( $43^{\circ}18'$  E/ $42^{\circ}019'$  N) Akhaltsikhe, Molotovka and Sangori. Except for the agricultural power plants and some industrial power plants all large and medium hydro and steam power plants of the Georgian SSR are included in this combined system which facilitates centralized distribution of the power available to all consumers in the entire Georgian SSR. There are no connections to the neighboring Armenenergo and Azerenergo power systems and to the high tension power net of the North Caucasus. The possibility of connecting the GruZenergo system to the above mentioned power nets and also to the Volga (Stalingrad) power system which was still being extended was investigated at the Institute of Energetics of the Academy of Sciences in Georgia during 1951 and 1952. The main lines of the Georgian SSR have a tension of 110 KV. The lines branching off from the transformer stations of the main system have tensions of 38 KV, 22 KV or 25 KV (i.e. Sukhum GES - Sukhum; Mendzhi ( $42^{\circ}04'$  E/ $42^{\circ}16'$  N) -Poti), 30.5 KV (Zestafoni ( $43^{\circ}03'$  E/ $42^{\circ}07'$  N) - Ferro-alloy Plant) and 6 KV to the substations. The agricultural power plants are not combined to one control supply net. High tension transmitter nets mostly of regional importance only were established after the large agricultural power plants had been put into operation. After 1951 or 1952 some of these nets were extended beyond regional importance.
8. Prior to 1940, the main industrial consumers of the Georgian SSR power system were plants of the light and construction material industry. The heavy industry, i.e. steel, crude oil, coal and the engineering industry was still in an infant stage and had not reached a high output at that time. Only the manganese industry had reached a high status of development and supplied 50 percent of the entire Soviet manganese output. After the war, between 1946 and 1950, the industry, particularly the heavy industry of the Georgian SSR, rose considerably. The total volume of the industry grew about 55 percent and the volume of the heavy industry about 62 percent. Increases noted with the various branches of the industry included 50 to 70 percent for luxuries such as tea, wine, canned food and tobacco, 36 percent for the textile industry, 60 to 120 percent for the construction material industry, 30 to 200 percent for the heavy industry including 30 percent for manganese ore, 170 percent for coal and 200 per-

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**Security Information****List of the Most Important Municipal and Industrial Power Plants**

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cent for machine tools. New industry branches in the Georgian SSR included the motor vehicle industry, an iron mill, machine plants which supplied their products to the coal and manganese ore mines. The various branches of the heavy industry had the highest quota of increase and also the highest ratio of power consumption to output. The growing mechanization of the mining and engineering industry and the electrification of the railroad also required large quantities of power. Due to the relatively limited funds available for the enlargement of the power system, priority had to be given to the construction of large power plants at the most important industrial plants in Georgia.

<u>District</u>	<u>Main Production</u>	<u>Power Sources</u>
Mirzaani ✓	oil drilling ✓	small local power plant, among others Alazan GES ✓ near Bakurtsikhe ✓ (45°49' E/41°40' N)
Rustavi ✓	iron, steel and rolled products ✓	Rustavi TEZ ✓
Tiflis ✓	aircraft, armament, machines, textiles and canned food ✓	ZAGES, Khram GES, Tiflis TEZ Dviri TETS
Akhaltzikhe	coal mining ✓	Dviri GES
Chiatura	manganese ore mining ✓	Rion GES and small local power plants
Sestafoni	ferro alloys ✓	Rion GES
Kutaisi (42°40' E/ 42°15' N) ✓	armament, machines and vehicles ✓	Rion GES and small local power plants
Tkibuli	coal mining ✓	Rion GES and small local power plants
Batum ✓	oil drilling and processing ✓	AZ GES and small local power plants
Tkvarcheli/Akarmara	coal mining ✓	Tkvarcheli GRES

The major part of the industrial plants, especially of the construction material, luxury and light industry and a great part of the villages if located away from the main line, are supplied by small local steam or hydroelectric power plants. This limits the further development.

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List of the Most Important Municipal and Industrial Power Plants

in the Georgian SSR

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<u>Location</u>	<u>Designation</u>	<u>Capacity</u>	<u>Consumers</u>
Abasha (42°12'N/42°01'E)	Ab-GES hydro power plant	3,000 kW	Town and plants of Abasha; MTS and industry of Kutaisi
Abastumani (41°43'N/42°05'E)	...	100-500	Wood working industry
Akhalkalaki (41°24'N/43°29'E)	Inemi Nazaretyan municipal hydro power plant	100-500	MTS, town and airfield
Akhalttsikhe (41°38'N/42°05'E)	hydro power plant 100 to 500 kW	"	MTS, wood working industry, shoe and textile plants
Tskali Adzharis Khalil (41°33'N/41°44'E)	AT-GES AZ-GES hydro power plant	16,000 kW	Industry of Batum, airfield sovkhозе
Agara (42°01'N/43°05'E)	steam power plant of the Georgian sugar refineries	1,000 to 3,000 kW	Sugar factories, luxury industry; MTS
Akarmara (42°52'N/41°47'E)	steam power plant 3,000 to 5,000 kW of the coal mines	"	Coal industry
Antrolauri (42°31'N/43°09'E)	hydro power plant 1,000 to 3,000 kW	"	Municipal consumers, local industry and airfield
Achare, West Georgia	power station of the Shrosh factory for fire proof materials	"	Factory for fire proof materials
Bakurtsikhe (41°40'N/45°49'E)	Alazan-GES hydro power plant and inter kolkhoz power station	4,500 kW	Oil processing industry, sovkhозе and other farms including Rayen Gurdzhaani (41°45' N/45°48' E)
Batum (41°38'N/41°38'E)	municipal steam power plant	3,000 kW	Municipal consumers, harbor and industry: shipyard, locomotive repair plant, machine factory, foundry, chemical, textile, leather and food industry
Batum	TEZ steam power plant of the refineries	1,500 kW	Oil refineries of Batum
Borzhomi (41°51'N/43°23'E)	power plant of the rivet factory	500 to 1,000 kW	Rivet factory, chemical, glass and food industry
Borzhomi	hydro power plant of the resort administration	"	Town
Khashuri (41°29'N/43°36'E)	power plant of the railway	"	Electrified railway

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Khomi - Chankuri (42°20'N/42°26'E)	municipal hydro power plant	3,500	
Gagry (43°26'N/40°15'E)	hydro and steam power plant Imeri Mikore	500 to 1,000 kw	leather, metal and wood working industry, luxury industry
Gori (41°58'N/44°03'E)	power plant	100 to 500 kw	MTS, Sovkhoz, glass and wood industry, canneries
Gori	new hydro power plant	12,000 (?) kw	as above
Gudauta (43°06'N/40°38'E)	municipal power plant	100 to 500 kw	foundry, leather, alabaster and luxury industry
Kobuleti (41°50'N/41°45'E)	railroad power plant	100 to 500 kw	railway, sovkhoz, luxury industry
Kutaisi (42°15'N/42°40'E)	municipal hydro power plant	100 to 500 kw	town and industrial plants
Kutaisi	power plant of the baryta plant		baryta plant
Kutaisi	power plant of the cloth factory	...	cloth factory
Kvezani (42°51'N/41°41'E)	Tivarcheli GRES, Imeni Boriva steam power plant	45,000 kw	coal industry
Lanchkhuti (42°05'N/42°00'E)	power plant	100 to 500 kw	MTS tobacco industry
Makharadze (41°56'N/42°00'E)	steam power plant of the Imeri Gurjishik komarov milk spinning mill	500 to 1,000 kw	spinning mill, machine factory, wood, and tea industry, MTS
Mikhava Tikhkaya (42°17'N/42°04'E)	power plant	...	town and, allegedly, also Poti, Samtredia and Abasha
Melotovka (41°28'N/44°15'E)	Kharan GES hydro power	135,000 kw	industry of Tiflis
Oni (42°32'N/43°26'E)	hydro power plant	...	town and textile industry
Ortachala, east of Tiflis	hydro power plant	3000 (?) kw	sovkhoz, Tiflis industry
Ochemchiri (42°43'N/41°28'E)	hydro power plant	100 to 500 kw	MTS rubber, wood working and luxury industry
Rion (42°12'N/42°45'E)	Rion-GES hydro power plant	25,000 kw	industry of Kutaisi, Tskaltubo and Tbilisi
Rustavi (42°37'N/43°05'E)	NEI Rusted steam power plant	50,000 kw	iron and steel plant, Rustavi and Tbilisi
Semo Arvelidze (41°49'N/44°25'E)	Sh. ESS Imeri Lenina hydro power plant	24,000 kw	industry of Tbilisi, MTS

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Samgori (41°42'N/45°11'E)	3 hydro power plants under construction, one of them possibly near Ortachala	10,000 (?) kW	industry of Tiflis and agriculture
Samtredia (42°11'N/42°20'E)	power plant of the railroad	...	railroad
Signakhi (41°37'N/45°54'E)	municipal power plant	...	town
Sukhumi (43°06'N/41°02'E)	steam and hydro power plant	3,000 kW <i>24,000</i>	town and local industry
Sukhum	Sukhum GES hydro power plant	25,000 kW	metal working, chemical, furniture and luxury industry
Stalinir (42°14'N/43°58'E)	hydro power plant	100 to 500 kW	MTS, wood industry
Zugdidi (42°30'N/41°53'E) According to one source near Abastumani	steam power plant of the wood working factory	1,000 to 3,000 kW	wood working factory, paper mill, machine factory and luxury industry, MTS
Telavi (41°55' N/45°31'E) on Alazan River	municipal power plant	100 to 500 kW	textile industry, MTS
Tbilisi 41°42'N/44°45'E	steam power plant of the street car lines	...	street car lines
Tiflis	steam power plant of the film factory	...	film factory
Tiflis	steam power plant of the R.Luxemburg tobacco plant and steam power plant of the railroad	...	tobacco plant
Tiflis	steam power plant	12,000 (?) kW	railroad
Tkibuli (42°22'N/42°59'E)	steam power plant of the im.Dzhaparidze coal mines	...	city, armament and machine plants, motor vehicle, chemical, wool working and food industry
Tkibuli	hydro power plant, new plant	10,000 (?) kW	coal industry, municipal construction material industry
Chiatura (42°19'N/43°18'E)	municipal steam power plant	3,000 (?) kW	town

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Chiatura	steam power plant of the manganese mines	500 to 1,000 kW	manganese industry
Chitakhevi Chitakhevsk (41°45'N/43°08'E)	Dviri GES hydro power plant	✓ 20 60,000 kW	coal industry and railroad
Varga, Abkhazian ASSR	power plant of the Kodorsk wood working industry	...	wood working industry
Tsiteli-Pskaro (41°29'N/46°07'E)	power plant	100 to 500 kW	machine factory and wood working industry

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List of Important Agricultural Power Plants in the Georgian SSR**CONTROL U. S. OFFICIALS ONLY**

Location	Designation	Capacity in kW	Consumers
Bagnari, Gagry District	Bagnari GES hydro power plant	..... (several turbines)	... (in operation since 1949)
Bashkichevi (41°20'N/44°12'E)	hydro power plant of 119 Butter Sovkhose	...	Sovkhose, MTS 50X1-HUM
On Eshudzha River southeast of Makharadze	hydro power plant	...	tea industry, under construction in 1950
Khertvisi (41°28'N/43°17'E)	Khertvisi GES hydro power plant	...	Khertvisi, Khizabavra, Zaro; in operation since 1951.
Khevi (41°58'N/42°17'E)	hydro power plant	...	... (under construction in 1948)
Duripshskaya (43°11'N/41°39'E)	hydro power plant	...	... (under construction in 1951)
Gali (42°38'N/41°42'E)	power plant of the Sovkhose	100 to 500 kW	Tea Sovkhose, MTS
Canakhleba (43°16'N/42°42'E)	hydro power plant	...	... (under construction in 1948)
Gudauty (43°06'N/40°38'E)	hydro power plant of the Sovkhose	...	Sovkhose and mill
Gurdzhaani (41°45'N/45°48'E)	power plant	100 to 500	MTS
Kabali (41°50'N/46°08'E)	hydro power plant	...	... (under construction in 1950)
Kacheyeti (42°28'N/43°06'E)	hydro power plant	...	... (under construction in 1951)
Kistauri (41°59'N/45°16'E)	hydro power plant	...	... (under construction in 1950)
Lagodekhi (41°49'N/46°16'E)	hydro power plant	100 to 500	MTS, tobacco plantations 50X1-HUM
Luxemburgi (41°28'N/44°33'E)	power plant	100 to 500	MTS, wine yards
Manglisi (41°44'N/44°25'E)	power plant	100 to 500	...

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Northeast of Ochemchiri, hydro power plant ... at the fork of Tsvaba and Moskva Rivers	35 villages and 40 kolkhozes
Orbeli ✓ (42°38'N/42°49'E)	hydro power plant ... ... (under construction in 1950)
Pantskhva ✓ Psircha ✓ (43°06'N/40°48'E)	power plant 100 to 500 ...
Ritseula, Southwest Georgia, on the Ritseula River	hydro power plant 3,000 (?) of the Ritseula GES
Zhinvali ✓ (42°08'N/44°45'E)	hydro power plant ... Dusheti and villages of the rayon; under construc- tion in 1950
Shroma ✓ (41°51'N/45°39'E)	hydro power plant ... ... (under construction in 1948)
Sagaredzho ✓ (41°44'N/45°20'E)	hydro power plant 100 to 500 MTS
Tabash on Kham River, upstream of Mototovka	hydro power plant 3,000 (?) ...
Tetrichali ✓ (42°01'N/43°01'E)	hydro power plant ... ... (under construction in 1950)
Tiripon in the Tiflis area, probably Tiripon near Samgori	hydro power plant 3,600 of Tiripon GES 150 kolkhoz villages including also the ones of Gori Rayon; in operation since 1951
Chkhortska ✓ (42°30'N/42°00'E)	power plant 100 to 500 tea plantations
Chkhorteli ✓ (42°47'N/41°44'E)	hydro power plant ... ... (under construction in 1948)
Chokhatauri ✓ (42°01'N/42°14'E)	power plant 100 to 500 tea plantations
Tsalendzhikha ✓ (42°34'N/42°03'E)	power plant 100 to 500 tea plantations, MTS

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50X1-HUM

Annex 4

- transmission lines with  
or 110 kV
- transmission lines for  
69, 25, or 10 kV res.  
The location of the high  
voltage and medium voltage  
is unknown.
- total capacity in 1,000 MVA

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Annex 4

The Crossenergy Power Transmission Net of the Georgian S.S.R.

**Legend:**

- transmission lines with a capacity of 110 kV
- transmission lines for 6, 22, 33, or 38 kV res.
- The generation of the Aragvi, Kura and Samara - This is unknown  
(30 MW) estimate in 1,000 km<sup>2</sup>

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Armenian S.S.R.

5001e 1,500,000

Armenian S & R

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50X1-HUM

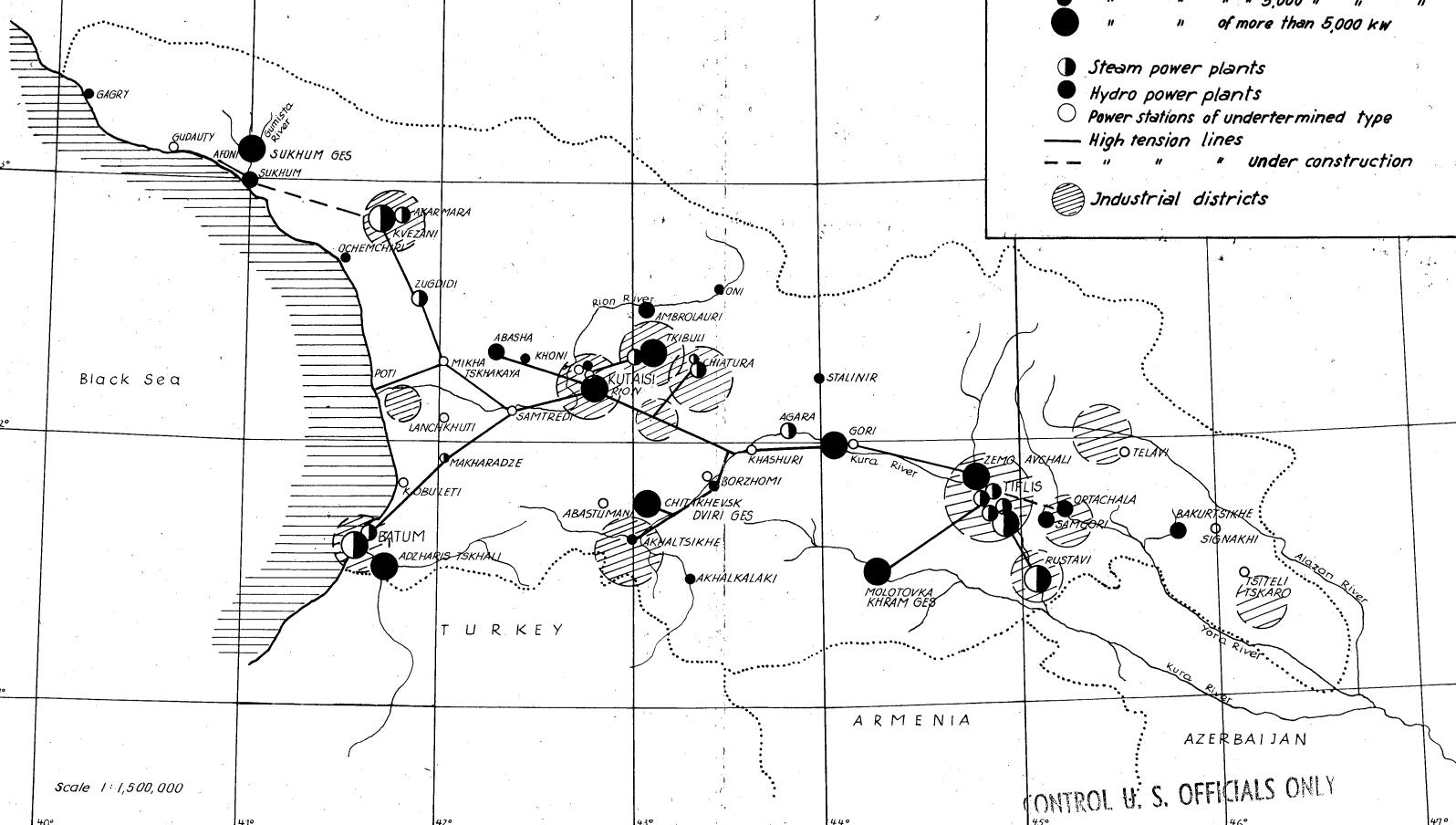
Industrial Power Plants and Industrial Districts in the Georgian SSR.

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Annex I

- Power reserves up to 1,000 kw installed capacity
- ● " " " " 5,000 " " "
- ● " " " of more than 5,000 kw
- (○) Steam power plants
- (●) Hydro power plants
- (○) Power stations of undetermined type
- High tension lines
- - " " " under construction
- (◎) Industrial districts

Black Sea



Scale 1:1,500,000

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